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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/760,926	01/16/2001	Takao Abe	09792909-4756	4866

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SONNENSCHN NATH & ROSENTHAL
P.O. BOX 061080
WACKER DRIVE STATION
CHICAGO, IL 60606-1080

EXAMINER

CREPEAU, JONATHAN

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 03/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/760,926

Applicant(s)

ABE, TAKAO

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 2, 4-9, 12 and 13 is/are allowed.
- 6) ☒ Claim(s) 3, 10, 11 and 14-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 13 January 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 1-19. Claims 1, 2, 4-9, 12, and 13 are allowed, as the translation of priority application 2000-6747 supports these claims. However, claims 3, 10, and 11 remain rejected under 35 USC §103 because the translation does not support these claims. Furthermore, claims 3 and 10 remain rejected, and claim 11 is newly rejected under 35 USC §112, first paragraph, as not being enabled by the specification. Claims 14-19 remain rejected under 35 USC §103 for substantially the reasons of record. Accordingly, this action is made final.

Drawings

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on January 13, 2003 have been approved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

3. Figures 6-8, and possibly other figures, should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: 11f. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference

sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The disclosure is objected to because of the following informalities: On page 26, second paragraph, Figure “1A” is referenced, however, Figure 1A does not exist in the application.

Appropriate correction is required.

Claim Objections

6. Claim 19 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 19 is identical to the claim it directly depends from.

Therefore, claim 19 fails to further limit the parent claim.

7. Claims 5 and 19 are objected to because of the following informalities: in claim 5, line 2, “welded” should be “is welded”; in claim 19, last clause, “winded” should be “wound.”

Appropriate correction is required.

Claim Rejections - 35 USC § 112

8. Claims 3, 10, and 11 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a projecting portion connected to a lead through a hole in the disk, does not reasonably provide enablement for a projecting portion connected to a lead through a “small-thickness portion” of the disk. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The claimed disk is best shown in Figs. 5A-D of the application as reference character 11. There does not appear to be any indication in these figures or in the rest of the specification that the projecting portion (6a) is connected to a lead through a “small thickness portion” of the disk 11. The projecting portion is, however, clearly connected through the hole (11c) in the disk. Correction and/or clarification is required.

Claim Rejections - 35 USC § 103

9. Claims 3, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 2000-21380 in view of JP 10-284035.

JP 2000-21380 is directed to nonaqueous lithium secondary batteries (see paragraph [0001] of the machine translation). As shown in Figure 11, a safety valve (RP) is arranged on one end side of a cylindrical outer packaging can (1) holding an electrode element therein. The safety valve comprises a projecting portion (532) that projects toward the electrode element and is connected to a lead of the element (32) at the center of the safety valve. As shown in Figures 8 and 10, the safety valve comprises a plurality of linear thin portions (R5) that are formed almost

along circumferences of concentric circles surrounding the projection. Additional thin portions (R4) extend in the radial direction and connect adjacent ends of the circumferential thin portions. The lengths of the circumferential thin portions are almost equal to each other. The valve is welded on a sub-disk (9) on a free end of the positive electrode lead (32) (see paragraph [0029]). Regarding claim 3, the reference further teaches the presence of a disk (11) comprising a central hole between the safety valve (RP) and the sub-disk (9).

JP 2000-21380 does not expressly teach that the electrode element is a spirally-wound laminate (claim 11) or that the battery comprises electrode materials which dope and undope lithium (e.g., that it is a lithium-ion battery) (claim 10). The reference further does not expressly teach that the disk 11 has a linear thin portion (claim 3).

JP 10-284035 is directed to an explosion-proof mechanism for a sealed battery. In Figure 1, it teaches an upper safety valve (17) having a thin portion welded to a lower disk (18) also having a thin portion (29).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of JP '035 to use a thin portion in the disk of JP '380. In paragraph [0010], JP '035 teaches that "reliable current interception function" can be obtained using this configuration. Accordingly, the artisan would be motivated to use a rupturable thin portion in the disk of JP '380.

Additionally, the artisan would be motivated to use such a spiral laminate as the electrode element of the Japanese reference. As noted above, the reference teaches a cylindrical battery body in Figure 11. The artisan would therefore be motivated to use a spiral laminate because this

structure is commonly used in cylindrical lithium batteries and is known to result in a high energy density. Furthermore, the artisan would be motivated to use electrode materials that dope and undope lithium so as to result in a lithium-ion battery, because these materials are known to have higher cycle life and increased safety compared with electrode materials that do not intercalate lithium (e.g., lithium metal). Accordingly, this limitation is also not considered to distinguish over the reference.

10. Claims 14-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taki et al (U.S. Patent 5,418,082) in view of JP 10-284035.

Regarding claims 17 and 19, Taki et al. is directed to nonaqueous lithium secondary batteries having spirally-wound electrode laminates (see col. 1, lines 10 and 46). Regarding claim 14, as shown in Figure 6, a safety valve (5) is arranged on one end side of the cylindrical outer packaging can (2) holding the electrode element therein. The safety valve comprises a projecting portion (9) that projects toward the electrode element and is connected to a lead (7) of the element at the center of the safety valve. A disk (23) having a central hole (21) is positioned between the safety valve and the electrode element, and the projecting portion is connected to the lead of the electrode element through the central hole. The disk further comprises a plurality of holes (22) on its outer periphery.

The reference does not expressly teach that the disk has a linear thin portion formed in a circular shape surrounding the hole (claims 14 and 15). The reference further does not teach that

the battery comprises electrode materials which dope and undope lithium (e.g., that it is a lithium-ion battery) (claims 16 and 18).

As noted above, JP 10-284035 is directed to an explosion-proof mechanism for a sealed battery. In Figure 1, it teaches an upper safety valve (17) welded to a lower disk (18) having a circular thin portion (29).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of JP '035 to use a thin portion in the disk of Taki et al. In paragraph [0010], JP '035 teaches that "reliable current interception function" can be obtained using this configuration. Accordingly, the artisan would be motivated to use a rupturable thin portion in the disk of Taki et al.

Furthermore, the artisan would be motivated to use electrode materials that dope and undope lithium so as to result in a lithium-ion battery, because these materials are known to have higher cycle life and increased safety compared with electrode materials that do not intercalate lithium (e.g., lithium metal). It is noted that the Taki reference teaches a "carbon lithium battery" in column 1, line 11, which is indicative of a carbonaceous lithium intercalation negative electrode. Accordingly, the recitation of intercalation electrodes in claims 16 and 18 is also not considered to distinguish over the references.

Response to Arguments

11. Applicant's arguments filed January 13, 2003 have been fully considered but they are not persuasive.

With regard to the §112, first paragraph rejection of claims 3 and 10, Applicants state that “the specification has been amended to clarify claims 3 and 10.(Page 20-22, lines 25-5).” However, this portion of the specification, even in light of the amendments, still does not appear to adequately enable an artisan to make and use the subject matter recited in claim 3. It is still unclear how the projecting portion (6a) is connected to a lead (4) “through” a small thickness portion (11e) of the disk (11). This is in contrast to claim 4, which recites that the projecting portion is connected through a central hole (11c) in the disk. Further clarification or other appropriate action with respect to claim 3 is respectfully requested.

Regarding the §103 rejection of claims 3, 4, 10, and 12, Applicant urges that the JP 2000-21380 reference does not qualify as prior art against these claims. However, it is believed that the reference still qualifies as prior art against claim 3 and its dependent claims, because the subject matter of claim 3 is not adequately supported by the translated priority document (2000-6747). There does not appear to be any disclosure or suggestion within the priority document that the projecting portion is “connected to the lead of the electrode element through the small-thickness portion of the disk,” as recited in claim 3. Applicants further assert that JP 2000-21380 “neither discloses or suggests a safety valve having two different dimension circles which a plurality of linear thin portions are formed.” However, it is submitted that Figure 8 of JP ‘380 clearly teaches this feature.

With regard to the §103 rejection of claims 14-19, Applicants assert that the Taki reference “fails to disclose or suggest that a disk has a linear portion formed in a circular shape surrounding the hole,” and further assert that JP ‘035 “only discloses a safety valve welded to a lower disk having a circular thin portion.” However, these it is believed that these assertions

amount to a piecemeal analysis of the references. Applicants have simply restated the acknowledged deficiencies of each reference without addressing the motivation to combine the references. As the Examiner has stated such motivation above, the combination of the references is believed to be proper and the rejection is maintained.

Allowable Subject Matter

12. Claims 1, 2, 4-9, 12, and 13 are allowed.

13. The following is an examiner's statement of reasons for allowance:

JP 2000-21380 is the closest prior art to the instant claims; however, Applicant's submission of a translation of priority document 2000-6747 is sufficient to remove the reference as prior art against these claims. Accordingly, claims 1, 2, 4-9, 12, and 13 are allowable.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

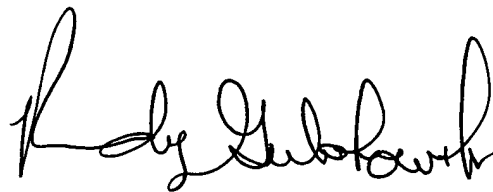
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (703) 308-4333. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 305-5408 or (703) 305-5433.

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JSC

March 12, 2003

A handwritten signature in black ink, appearing to read 'Randy Gulakowski', is positioned above the printed name and title.

RANDY GULAKOWSKI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700